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ORIGINAL PAPER

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The Association of Breastfeeding Difficulties at the 6th week Postpartum with Maternal Psychological Well-being and Other Perinatal Factors: a Greek Retrospective Longitudinal Study

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ABSTRACT

Background. The difficulties a woman faces with breastfeeding are among the factors that can lead to its early cessation. **Objective:** The aim of this study was to investigate whether the presence of maternal breastfeeding difficulties at the 6th week postpartum is associated either with maternal psychological well-being and the presence of a mental health disorder in the perinatal period or with other perinatal factors. **Methods:** This study was conducted at a primary mental health facility in Athens (Greece), the "Day Center for the Care of the Mental Health of Women (Perinatal Mental Health Disorders)". It is a retrospective longitudinal study, examining a sample of 622 women who used the Day Center's services from January 2015 to May 2018. Statistical analyses included the *Spearman* rank correlation coefficients and multiple univariate analyses of variance. **Results:** Increased scores on psychometric tools (EPDS, PHQ-9) during pregnancy or postpartum are associated with increased maternal breastfeeding difficulties at the 6th week postpartum. Other factors such as an unplanned conception ($p=.016$), maternal dissatisfaction with labor ($p=.038$) and formula feeding in the hospital ($p<.001$) or at the end of the 1st month postpartum ($p<.001$) are associated with the occurrence of breastfeeding difficulties. Also, the mothers who experienced lactation mastitis ($p=.009$), had sleep difficulties ($p=.013$), woke up fatigued ($p<.001$) during the first 6 weeks postpartum, and the mothers whose infants experienced colic ($p=.009$) were more likely to complain about breastfeeding

difficulties at the 6th week postpartum. **Conclusion:** This study demonstrates a relationship between increased scores on maternal psychometric tools in the perinatal period and other perinatal factors with increased breastfeeding difficulties at the 6th weeks postpartum.

Keywords: breastfeeding difficulties, postpartum, psychological well-being.

1. BACKGROUND

Global research is constantly highlighting the benefits of breastfeeding for the mother and the newborn (1, 2). However, despite the proven value of breastfeeding, the percentages of women that breastfeed remain low, especially in some countries, while international recommendations for the duration of breastfeeding are not being followed (5). Women often end up ceasing breastfeeding prematurely due to biological, psychological and social factors (4-6). Among the factors that lead a woman to make the decision to stop breastfeeding are the difficulties she faces in relation to the breastfeeding process (7, 8).

Breastfeeding difficulties include injured nipples, poor latching by the infant, unsatisfactory breast milk production, plugged milk ducts, mastitis, breast engorgement, insufficient weight gain, maternal exhaustion, and others (8). During the first days after birth, between 70% (as recorded in the US) and 83% (in Australia and New Zealand) of breastfeeding women

experience breastfeeding difficulties (9). These rates seem to decrease over time and reach about 13% after 24 weeks postpartum (9).

In some cases, women who experience difficulty with breastfeeding have high scores on psychometric instruments (4). Difficulties such as mastitis or injured nipples can be particularly painful and debilitating for a woman's body, resulting in bad mood or even the onset of depressive symptoms (10, 11). Women with injured nipples experience breastfeeding as a scary experience, as they have to suffer this pain several times a day (4). That is why, in some cases where mothers suffered from injured nipples, breastfeeding was described as "horrible" and "torturously painful" (11). It has also been shown that mothers who stop breastfeeding due to pain or physical difficulties are more likely to subsequently develop depressive symptoms (4).

In addition to the difficulties of breastfeeding that involve physical pain, such as injured nipples and mastitis, women face other problems, such as lethargy (hypotension) of the newborn, poor latching, and insufficient production of breast milk. Such situations result in women breastfeeding for many hours (13) and, therefore, they get tired and feel exhausted; moreover, often, the baby does not gain the desired weight, which causes particular stress to new mothers (14). According to the literature, the onset of depressive symptoms may be related to the mother's reduced self-efficacy when it comes to breastfeeding and the guilt she experiences when facing breastfeeding difficulties (15, 16).

2. OBJECTIVE

Knowing that breastfeeding-related maternal difficulties can affect her mood and mental health, it is worth exploring the relationship between these factors. Thus, the aim of this study is to investigate whether the presence of maternal difficulties related to breastfeeding at the 6th week postpartum is associated with maternal psychological well-being and the presence of a mental health disorder in the perinatal period, as well as with other perinatal factors.

3. MATERIAL AND METHODS

This study was conducted at a primary mental health facility in Athens, (Greece), namely the "Day Center for the Care of the Mental Health of Women (Perinatal Mental Health Disorders)". It is a retrospective longitudinal study that examines a sample of 622 women who used the Day Center's services from January 2015 to May 2018. The services that these women received from pregnancy until the end of the 1st year postpartum included a) midwife-led antenatal education, b) midwife-led counseling and support of breastfeeding, c) timely screening for pathological mental health symptoms, d) timely treatment and counseling by mental health professionals to those women for whom it was considered necessary, e) training and support to new parents, f) phone support and counseling by mental health professionals and midwives.

In order for a woman to be included in the study: a) she should have completed the Day Center's intervention program, b) there should be sufficient recorded data for her (a complete health history), and c) her data should be written in Greek. All women who participated in this study were

informed about the purposes of the Day Center and the analysis of their information in a research context. Oral and written consent was obtained from all women who used the Day Center's services, so that the information in their file could be used for research purposes. This research study was approved by the Research Ethics Committee of the Non-Profit Organization "FAINARETI" (Ref. Number 91/17.9.19).

Measures

The data analyzed in this study were obtained from a) the women's history (medical, psycho-emotional, psychiatric and social history) taken during pregnancy, b) the peripartum and postpartum health and well-being history taken at the 6th week postpartum, c) the use of psychometric tools before and after childbirth (at approximately 24th-28th gestation week, at approximately 34th-38th gestation week and at the 6th week postpartum), and d) a questionnaire on infant feeding and behavior that was completed after breastfeeding cessation.

The screening tools that were used included: a) The Edinburgh Postnatal Depression Scale (EPDS)-Greek version. The Edinburgh Postnatal depression Scale (EPDS) (17) is a 10-item self-report questionnaire (range 0-30) that has been established as a useful screening instrument for detection of women at risk for depression in the perinatal period (18). This screening tool has been translated and validated for the Greek population by two separate research groups (19, 20). In this study, the Greek version of the tool by Leonardou et al. (19) was used, and the average alpha coefficient was .86. b) The Patient Health Questionnaire-9 (PHQ-9). This screening tool has been validated to screen for depression and it has been developed specifically for use in primary care settings (21). It is not yet culturally adapted to the Greek language; it has only been translated for the needs of the Day Center's participants. In the present study the average Cronbach alpha coefficient was .85.

Statistical analysis

The data were analyzed using SPSS version 22.0. Quantitative variables were described as absolute frequencies (*n*) and relative frequencies (%). Also, the *Spearman* rank correlation and the multiple univariate analyses of variance were used, in order to distinguish variables associated with "breastfeeding difficulties at the 6th week postpartum", as the dependent variable.

4. RESULTS

A total of 622 women were analyzed in this study. Their mean age was 32.58 ± 6.15 (*SD*) years, while their marital status was almost universally, showing that 96.0% of the participated women were married or had a partner. The significance of the relationships between maternal breastfeeding difficulties and a set of independent continuous variables, presented in Table 1, was explored through Spearman rank correlation coefficients. Through several phases of measuring, the correlation analyses revealed that with an increase in scores on the EPDS and PHQ-9 scales, mothers' breastfeeding difficulties at the 6th week postpartum also increased. Specifically, it can be observed that the scores on these scales at approximately 24th-28th gestation week (EPDS - $\rho=.097^*$, PHQ-9 - $\rho=.113^*$), at approximately 34th-38th gestation week (EPDS - $\rho=.176^{**}$, PHQ-9 - $\rho=.188^{**}$), and at the

	Breastfeeding Difficulties for Mothers at the 6 th Week Postpartum	
	Spearman ρ	p
EPDS – at the 24 th -28 th gestation week	.097 [*]	.028
EPDS – at the 34 th -38 th gestation week	.176 ^{**}	.012
EPDS – at the 6 th Week Postpartum	.163 ^{**}	.008
PHQ-9 – at the 24 th -28 th gestation week	.113 [*]	.010
PHQ-9 – at the 34 th -38 th gestation week	.188 ^{**}	.008
PHQ-9 – at the 6 th Week Postpartum	.172 ^{**}	.005

Table 1. Spearman Rank Correlations with Breastfeeding Difficulties for Mothers at the 6th week postpartum. **Correlation is significant at the 0.01 level (2-tailed).

6th week postpartum (EPDS - ρ =.163^{**}, PHQ-9 - ρ =.172^{**}) are positively correlated with maternal breastfeeding difficulties at the 6th week postpartum (Table 1).

*Correlation is significant at the 0.05 level (2-tailed).

For the examination of the relationship between maternal breastfeeding difficulties at the 6th week postpartum and a group of binary, categorical and interval independent variables, a set of multiple univariate analyses of variance was applied. Statistically significant relationships are presented in Table 2. According to analyses, women who did

not plan to conceive were more likely to have breastfeeding difficulties than the others (p =.016). Those who were not satisfied with their labor, or were just a bit satisfied, had more breastfeeding difficulties, compared to those that were very much satisfied (p =.038). Regarding the variables of newborn feeding, women who were giving only formula in the hospital (p <.001) and at the 1st month at home (p <.001) had an increased likelihood of facing breastfeeding difficulties at the 6th week postpartum, in relation to those who breastfed exclusively. A difference can, also, be noted between the mothers whose infants experienced colic and those whose infants did not have such problems; those in the first category (with colic) were more likely to have breastfeeding difficulties (p =.009) than the others. Additionally, women who experienced lactation mastitis had more breastfeeding difficulties (p =.009). Lastly, women facing sleeping difficulties (p =.013) and waking up fatigued during the first 6 weeks postpartum (p <.001) had greater probability of complaining about breastfeeding difficulties than the others. To conclude, out of all the aforementioned independent variables (Table 2), the greatest proportion of the variance of breastfeeding difficulties could be explained by newborn feeding at the 1st month (12.7%), followed by newborn feeding in the hospital, with 4.5%, and waking up fatigued during the first 6 weeks postpartum, with 3.8% of the variance explained.

	Breastfeeding Difficulties for Mothers at the 6 th Week Postpartum						
		M	SD	F	df	p	η^2
Conception Planning	No	3.23	1.38	5.844	1	.016	.011
	Yes	2.83	1.46				
Labor Satisfaction	Not at all/A bit	2.87a	1.41	2.831	3	.038	.016
	Moderately	2.94ab	1.45				
	Quite a lot	3.09ab	1.44				
	A lot	3.12b	1.44				
Newborn Feeding in the Hospital	Exclusive Breastfeeding	2.70a	1.44	12.682	2	p <.001	.045
	Breastfeeding and Formula	3.30b	1.39				
	Just Formula	3.74b	1.41				
Newborn Feeding at the 1 st Month Postpartum	Exclusive Breastfeeding	2.60a	1.39	39.131	2	p <.001	.127
	Breastfeeding and Formula	3.69b	1.26				
	Just Formula	4.40b	1.12				
Infant Colics	Not at all	2.70a	1.43	3.882	3	.009	.021
	A bit	2.77ab	1.38				
	Moderately	3.11ab	1.51				
Lactation Mastitis	Quite a lot/A lot	3.20b	1.45	6.791	1	.009	.013
	No	2.81	1.43				
	Yes	3.24	1.47				
Experiencing Sleeping Difficulties (at the 6 th Week Postpartum)	No	2.73	1.41	6.157	1	.013	.011
	Yes	3.04	1.48				
Experiencing Fatigue on Waking Up (at the 6 th Week Postpartum)	Not at all/A bit	2.55a	1.43	10.478	2	p <.001	.038
	Moderately	2.90ab	1.42				
	Quite a lot/A lot	3.20a	1.41				

Table 2. Multiple Univariate Analyses of Variance of Breastfeeding Difficulties for Mothers at the 6th Week Postpartum. Note. Means that share a common index (a, b) do not differ significantly from each other according to the Scheffé post-hoc criterion.

5. DISCUSSION

This study investigates whether the occurrence of maternal breastfeeding difficulties at the 6th week postpartum is associated with maternal psychological well-being and the presence of a mental health disorder in the perinatal period or with other perinatal factors. Statistical analyses showed that increased scores on psychometric tools (EPDS, PHQ-9) during pregnancy or at 6 weeks postpartum, which may indicate the presence of a mental disorder, appear to increase the incidence of maternal breastfeeding difficulties at the 6th week postpartum. Also, other factors, such as unplanned conception ($p=.016$), maternal dissatisfaction with labor ($p=.038$), and formula feeding in the hospital ($p<.001$) or at the end of the 1st month postpartum ($p<.001$) are associated with the occurrence of breastfeeding difficulties. Moreover, mothers who experienced lactation mastitis ($p=.009$), had sleep difficulties ($p=.013$), and woke up fatigued ($p<.001$) during the first 6 weeks postpartum, and mothers whose infants experienced colic ($p=.009$), were more likely to complain about breastfeeding difficulties at the 6th week postpartum.

Our findings, which associate the existence of maternal breastfeeding difficulties at the end of the puerperium with a woman's high scores on psychometric tools completed during pregnancy and the puerperium (which may indicate a mental health disorder) agree, in a way, with studies that have associated premature breastfeeding cessation, which usually occurs when there are difficulties with breastfeeding, with the occurrence of depressive symptoms in women (22-24). The connection between maternal mental health and breastfeeding has been highlighted in the literature. We know that a) women with a mental health disorder experience several difficulties with breastfeeding resulting in them not breastfeeding exclusively or for a long time (25-27), and b) early cessation of breastfeeding (which most often occurs due to significant maternal difficulties) may be the reason for the appearance of an anxiety or depressive disorder (mainly in women with a severe psychiatric history) (22, 28, 29). Maternal physical problems, including difficulty with breastfeeding in the first 3 months (or later) postpartum, have been shown to be associated with depressive symptoms in women 6 to 12 months after giving birth (30, 31).

However, it is not clear whether breastfeeding difficulties precede or follow depressive symptoms. This study showed that high scores on psychometric tools, even from the period of pregnancy, are associated with the appearance of breastfeeding difficulties at the end of the puerperium. This finding could be explained by the following reasoning. Women with depressive behavior may perceive the newborn's crying as excessive, have difficulty coping with his/her behavior (32), and therefore, have problems with breastfeeding. In addition, the difficulty these women face in handling and calming their newborn may indicate that they fail to place the baby properly on the breast, resulting in poor latching that, in turn, leads to insufficient feeding, nipple injury and many additional problems that impede breastfeeding. Also, these women may have reduced interaction with their newborn (33), a behavior that, obviously, causes breastfeeding problems.

All the above highlight the value of continuous and long-term midwife-led care and monitoring of pregnant women for the prevention and detection of pathological mental symptoms throughout the perinatal period, as well as of the difficulties associated with breastfeeding that often lead to its cessation. The findings of this study, also, highlight the need for health professionals to focus on factors such as a woman's satisfaction with labor, breastfeeding exclusivity, prevention of mastitis and sleep improvement, so as to prevent, as much as possible, the occurrence of difficulties that would impede breastfeeding. Early detection and management of maternal breastfeeding difficulties is of particular value, especially for women with pathological mental health symptoms, as these difficulties will lead to early cessation, which, in turn, will cause additional guilt to the woman and will further burden her psychological well-being (34).

6. CONCLUSION

The occurrence of maternal breastfeeding difficulties at the 6th week postpartum is associated with increased scores on psychometric tools completed during pregnancy and at the end of the puerperium, which could indicate the existence of a maternal mental health disorder. Additionally, factors, such as an unplanned conception, maternal dissatisfaction with labor, formula feeding of the infant in the hospital or in the 1st month postpartum, the experience of colic by the newborn, maternal mastitis, maternal sleep difficulties and fatigue due to night awakenings, are, also, associated with maternal breastfeeding difficulties at the 6th week postpartum. The provision of continuous midwife-led care to the woman, from pregnancy and throughout the lactation period, will contribute to the prevention, early detection and early management of breastfeeding difficulties, and will favor the continuation of breastfeeding.

- **Authors contribution:** M.D: conceptualization, methodology, supervision, visualization, writing, original draft and editing, C.D: writing, project administration, I.M-T.: methodology, data analyzing, review and editing, E.K.: methodology, project administration, E.T.: methodology, project administration, E.A.: review and editing, supervision. All authors have read and approved the manuscript.
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